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Ideal spraying days tough to come by

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Timely pesticide applications have been a challenge in 2020. So far in the month of June, much of Minnesota has had notably few hours that would be considered “ideal” for pesticide

Labels

IPM-Weeds

applications. The biggest issues have been the abnormally windy conditions, coupled with very calm (<3mph) winds that favor temperature inversions. There have been reports of some unusual “off-target” herbicide issues this spring that are likely due to conditions being either 1) too windy, or 2) very calm (<3 mph) conditions with temperature inversions or variable winds.

**How many
“ideal”
pesticide
application
hours have we
had?**

Earlier this week I was asked how many hours we have had throughout

Minnesota to legally
apply dicamba products
to dicamba-tolerant
(DT) soybeans in 2020. If
you are familiar with the
label requirements to
apply dicamba products
to DT soybeans, you
know there are very
specific requirements.
Several weather-related
requirements include:

1. Do NOT apply when
temperature
inversions exist.
2. Do NOT apply
earlier than 1 hour
after sunrise or
later than 2 hours
before sunset.
3. Do NOT apply
unless wind speed
at boom height is
between 3 – 10
mph.
4. Do NOT apply when
rainfall is expected
within 24 hours in
amounts that would
exceed field

capacity.

These requirements are intended to reduce off-target movement. In general, these are also “ideal” conditions for the application of most pesticides. To calculate the number of “ideal” hours for pesticide applications (eg. the number of hours that dicamba products could be applied to DT soybeans), I analyzed weather data throughout Minnesota from June 1 - June 15. Results are presented in Figures 1-2, with the findings summarized below.

“Ideal” Application Hours behind Normal

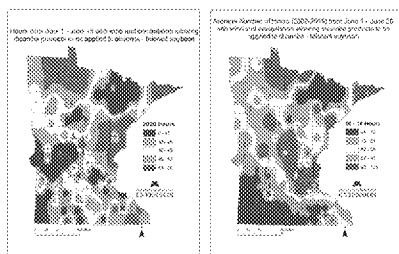


Figure 1. Accumulated number of hours L) between June 1st and June 15th, 2020 when wind speed and precipitation allowed dicamba applications to made to dicamba-tolerant soybeans, and R) the 20-year average number of hours when wind speed and precipitation would allow dicamba

applications to be made to dicamba-tolerant soybeans.

Only hours between 1 hour after sunrise and 2 hours before sunset are included.

Weather data from ASOS weather stations was downloaded from

[https://mesonet.agron.iastate.edu/request/download.phtml?](https://mesonet.agron.iastate.edu/request/download.phtml?network=MN_ASOS)

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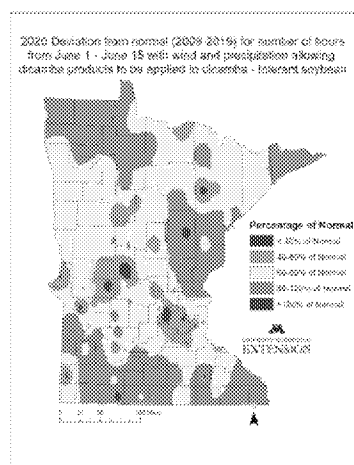


Figure 2. 2020 deviation from the 20-year average for the number of hours from June 1st – June 15th with wind and precipitation allowing

dicamba applications to be
made to dicamba-
tolerant soybeans.

- The number of ideal application hours in Minnesota ranges from 0 – 89 hours, depending on location, with an average of 47 hours between June 1st and June 15th (Figure 1).
- 97% of the state is behind the 20 year average for the number of ideal application hours, although 38% of the state is within 20% of normal (Figure 2).
- Much of Central Minnesota has had particularly few

(<40) hours of ideal application conditions.

Windy June (or Not?)

Much of Minnesota has experienced windier conditions than normal this month which have made applications difficult. An equally important issue at some locations has been the lack of wind (<3mph), which favors temperature inversions.

Inversions can “trap” pesticides within a stable air layer, which allows longer-distance transport of pesticides.

To reduce off-target movement, most pesticide labels cite that products should not be applied during windy conditions nor during low wind conditions (<3

mph) that favor
inversions and variable
winds.

The windy conditions
this month have made
timely pesticide
applications challenging.

When the wind finally
does go down, it's
equally important to
keep low wind speeds
and temperature
inversions in mind, as
particle drift can occur
under these conditions,
as well.

For more information
regarding drift and the
influence of the wind,
visit the recent article
from Andrew Thostenon
at NDSU:

<https://www.ag.ndsu.edu/cpr/weeds/drifting-in-the-wind-06-18-20>

For more information
regarding temperature

inversions, visit a
previous University of
Minnesota Crop e news
article at:
[https://blog-crop-
news.extension.umn.edu
/2017/06/temperature-
inversions-something-
to.html](https://blog-crop-news.extension.umn.edu/2017/06/temperature-inversions-something-to.html)

Summary

This has been a
challenging year in
making quality pesticide
applications in a timely
manner. Eliminating
off-target movement of
pesticides is the goal.
Applicators should do
their best to avoid
applications during
windy conditions. Off-
target movement can
also happen with low
wind speeds, especially
under temperature
inversions. Be sure to
consult with product

labels for
recommendations and
application
requirements.

Application equipment
can also be tailored to
minimize off-target
movement by using

larger droplet sizes,
shielded booms, and
lower boom heights.



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